

WHAT IS CLAIMED IS:

1 1. A data synchronization apparatus for maintaining
2 synchronization between a source data file and a copy data file
3 comprising:

4 a bulk copy controller capable of copying a plurality of
5 data records from said source data file to said copy data file; and
6 an update controller capable of detecting a change in a
7 data record previously copied by said bulk copy controller from
8 said source data file to said copy data file and copying said
9 changed data record from said source data file to said copy data
10 file.

1 2. The data synchronization apparatus set forth in Claim 1
2 wherein said update controller and said bulk copy controller
3 operate substantially concurrently.

1 3. The data synchronization apparatus set forth in Claim 1
2 wherein said source data file comprises at least one data table
3 comprising a plurality of data records and a synchronization
4 descriptor associated with said at least one data table.

1 4. The data synchronization apparatus set forth in Claim 3
2 wherein said bulk copy controller sequentially copies said
3 plurality of data records in said at least one data table in said
4 source data file to said copy data file and sets said
5 synchronization descriptor to an index value of a most recently
6 copied one of said plurality of data records.

1 5. The data synchronization apparatus set forth in Claim 4
2 wherein said update controller detects changes in said plurality of
3 data records in said at least one data table in said source data
4 file by monitoring selected ones of said plurality of data records
5 in said at least one data table in said source data file having an
6 index value less than said index value in said synchronization
7 descriptor.

1 6. The data synchronization apparatus set forth in Claim 5
2 wherein said update controller detects said changes in said
3 plurality of data records in said at least one data table in said
4 source data file by monitoring data write operations in said
5 plurality of data records in said at least one data table in said
6 source data file.

1 7. The data synchronization apparatus set forth in Claim 6
2 wherein said update controller is capable of detecting that said
3 copy data file is off line and has lost synchronization with said
4 source data file.

1 8. The data synchronization apparatus set forth in Claim 7
2 wherein said update controller is capable of determining that said
3 copy data file is on line and is capable of activating said bulk
4 copy controller by setting at least one synchronization descriptor
5 in said source data file to a zero value.

1 9. A telecommunication device comprising:
2 a primary processing system comprising a first memory
3 capable of storing a source data file;
4 a secondary processing system comprising a second memory
5 capable of storing a copy data file; and
6 a data synchronization apparatus coupled to said first
7 and second memories for maintaining synchronization between said
8 source data file and said copy data file, said data synchronization
9 apparatus comprising:
10 a bulk copy controller capable of copying a
11 plurality of data records from said source data file to said
12 copy data file; and
13 an update controller capable of detecting a change
14 in a data record previously copied by said bulk copy
15 controller from said source data file to said copy data file
16 and copying said changed data record from said source data
17 file to said copy data file:

18 10. The telecommunications device set forth in Claim 9
19 wherein said update controller and said bulk copy controller
20 operate substantially concurrently.

1 11. The telecommunications device set forth in Claim 9
2 wherein said source data file comprises at least one data table
3 comprising a plurality of data records and a synchronization
4 descriptor associated with said at least one data table.

1 12. The telecommunications device set forth in Claim 11
2 wherein said bulk copy controller sequentially copies said
3 plurality of data records in said at least one data table in said
4 source data file to said copy data file and sets said
5 synchronization descriptor to an index value of a most recently
6 copied one of said plurality of data records.

1 13. The telecommunications device set forth in Claim 12
2 wherein said update controller detects changes in said plurality of
3 data records in said at least one data table in said source data
4 file by monitoring selected ones of said plurality of data records
5 in said at least one data table in said source data file having an
6 index value less than said index value in said synchronization
7 descriptor.

1 14. The telecommunications device apparatus set forth in
2 Claim 13 wherein said update controller detects said changes in
3 said plurality of data records in said at least one data table in
4 said source data file by monitoring data write operations in said
5 plurality of data records in said at least one data table in said
6 source data file.

1 15. The telecommunications device set forth in Claim 14
2 wherein said update controller is capable of detecting that said
3 copy data file is off line and has lost synchronization with said
4 source data file.

1 16. The telecommunications device set forth in Claim 15
2 wherein said update controller is capable of determining that said
3 copy data file is on line and is capable of activating said bulk
4 copy controller by setting at least one synchronization descriptor
5 in said source data file to a zero value.

1 17. A method of maintaining synchronization between a source
2 data file and a copy data file comprising:
3 sequentially copying a plurality of data records from the
4 source data file to the copy data file; and
5 detecting a change in a data record previously copied in
6 the step of sequentially copying and copying the changed data
7 record from the source data file to the copy data file.

Sub 3
2 18. The method as set forth in Claim 17 wherein the step of
3 sequentially copying and the step of detecting a change are
performed substantially concurrently.

1 19. The method as set forth in Claim 17 wherein the source
2 data file comprises at least one data table comprising a plurality
3 of data records and a synchronization descriptor associated with
4 the at least one data table.

1 20. The method as set forth in Claim 19 wherein the step of
2 sequentially copying comprises the substeps of:

3 sequentially copying the plurality of data records in the
4 at least one data table in the source data file to the copy data
5 file; and

6 setting the synchronization descriptor to an index value
7 of a most recently copied one of the plurality of data records.

1 21. The method as set forth in Claim 20 wherein the step of
2 detecting a change comprises the substep of monitoring selected
3 ones of the plurality of data records in the at least one data
4 table in the source data file having an index value less than the
5 index value in the synchronization descriptor.